**7) Volumes of revolution**

Integration can be used to find volumes of revolution. By taking an equation and rotating it about an axis, a 3-D shape can be generated, and its volume calculated. At Achieved level, only polynomial functions will be given, and drawings will be provided to help.

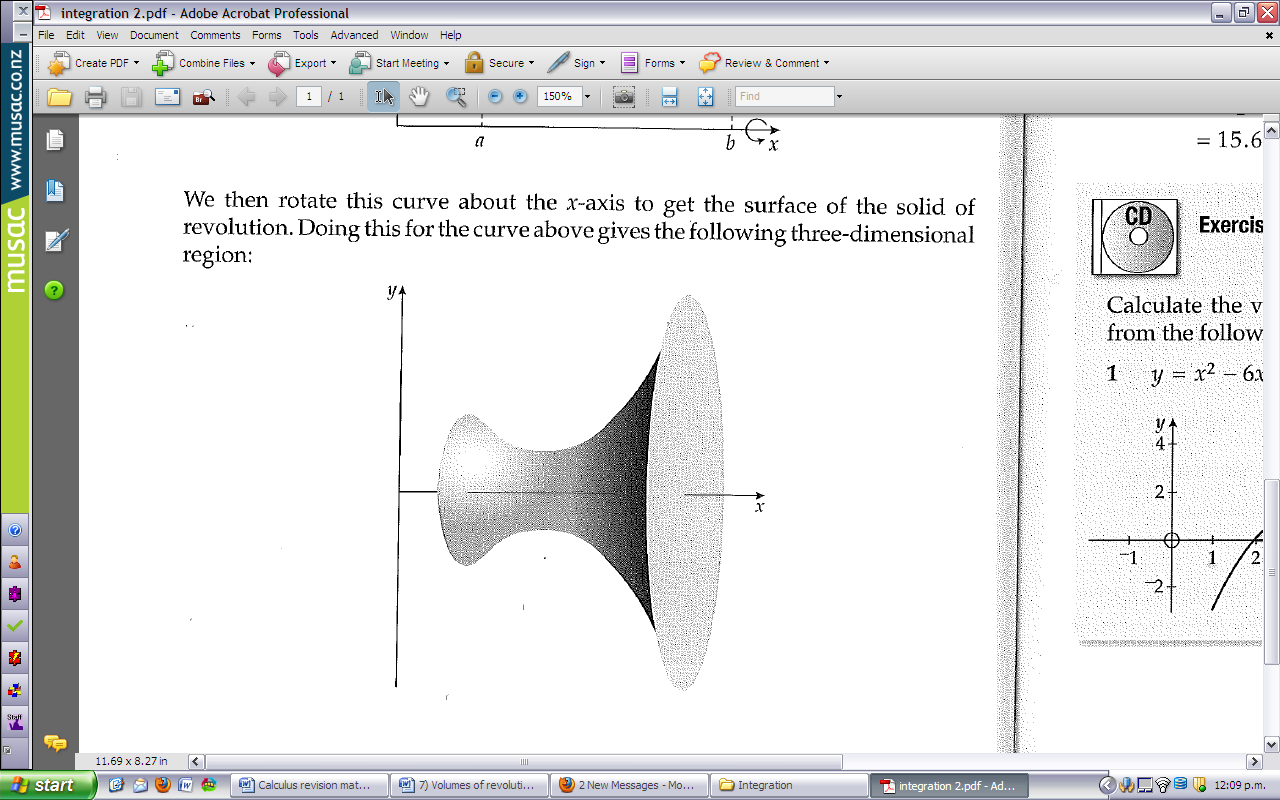
***Demonstration:***

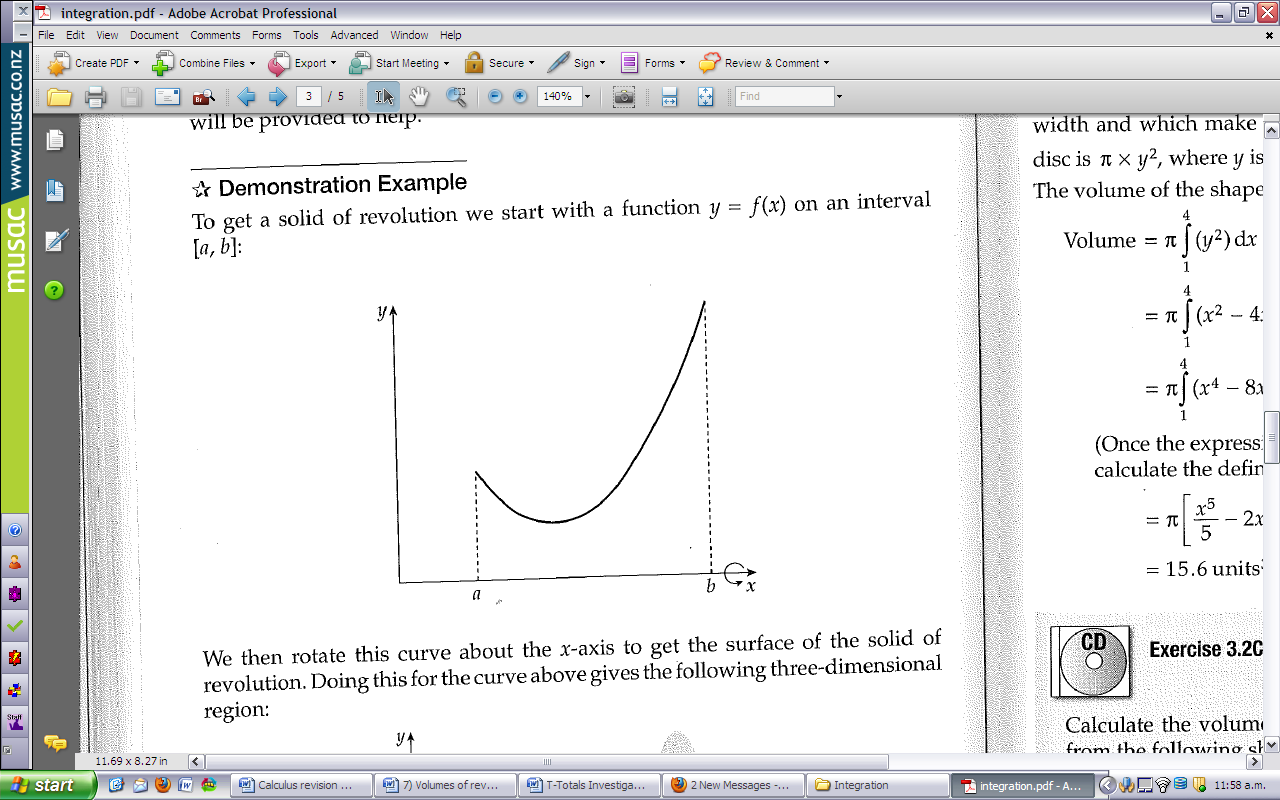
then the following three-dimensional

region (below) is produced:

If the function is

rotated about the -axis on an

interval :



The formula to calculate the volume of the solid is:  **.** The formula adds the

volume of all the discs of very tiny width which make up the whole shape.

***Example:*** Let the function of the curve be which can be written as . Let the values of and be 1 and 4 respectively. Work out the volume of the solid of revolution.

Worksheet:

Ex A8 – Volumes of revolution

Ex A7 – Areas under curves

Ex A1 – Integrating polynomials

Ex A2 – Integrating exponentials

Ex A3 – Integrating trig functions

Ex A4 – Integrating rational functions

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